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Conspectus of Families of Vascular Plants represented in the Flora of New South Wales

(The account of each family, or consecutive group of families as issued, will appear with separate pagination; the names of those families that have been published to date are in italics.)

GYMNOSPERMAE

- | | |
|------------------------|-----------------------|
| 1 <i>Zamiaceae</i> | 4 <i>Pinaceae</i> |
| 2 <i>Podocarpaceae</i> | 5 <i>Cupressaceae</i> |
| 3 <i>Araucariaceae</i> | |

ANGIOSPERMAE—MONOCOTYLEDONES

- | | |
|---|---|
| 6 <i>Typhaceae</i> | 29 <i>Commelinaceae</i> |
| 7 <i>Sparganiaceae</i> | 30 <i>Pontederiaceae</i> |
| 8 <i>Pandanaceae</i> | 31 <i>Philydraceae</i> |
| 9 <i>Potamogetonaceae</i> | 32 <i>Juncaceae</i> |
| 10 <i>Ruppiaceae</i> | 33 <i>Liliaceae</i> |
| 11 <i>Zannichelliaceae</i> | 34 <i>Xanthorrhoeaceae</i> |
| 12 <i>Najadaceae</i> | 35 <i>Agavaceae</i> |
| 13 <i>Zosteraceae</i> | 36 <i>Philesiaceae</i> |
| 14 <i>Aponogetonaceae</i> | 37 <i>Smilacaceae</i> |
| 15 <i>Posidoniaceae</i> | 38 <i>Haemodoraceae</i> |
| 16 <i>Juncaginaceae</i> | 39 <i>Amaryllidaceae</i> |
| 17 <i>Alismataceae</i> | 40 <i>Hypoxidaceae</i> |
| 18 <i>Hydrocharitaceae</i> | 41 <i>Alstroemeriaceae</i> |
| 19 <i>Gramineae, Part 1. Supplement</i> | 42 <i>Dioscoreaceae</i> |
| to Part 1; Part 2 | 43 <i>Petermanniaceae</i> |
| 20 <i>Cyperaceae</i> | 44 <i>Iridaceae</i> |
| 21 <i>Palmae</i> | 45 <i>Zingiberaceae</i> |
| 22 <i>Araceae</i> | 46 <i>Cannaceae</i> |
| 23 <i>Lemnaceae</i> | 47 <i>Burmanniaceae</i> |
| 24 <i>Flagellariaceae</i> | 48 <i>Orchidaceae. See H.M.R. Rupp:</i> |
| 25 <i>Restionaceae</i> | <i>The Orchids of New South</i> |
| 26 <i>Centrolepidaceae</i> | <i>Wales. 1943. Facsimile</i> |
| 27 <i>Xyridaceae</i> | <i>edition with Supplement by</i> |
| 28 <i>Eriocaulaceae</i> | <i>D. J. McGillivray. 1969.</i> |

ANGIOSPERMAE—DICOTYLEDONES

- | | |
|----------------------------|----------------------------|
| 49 <i>Casuarinaceae</i> | 69 <i>Molluginaceae</i> |
| 50 <i>Piperaceae</i> | 70 <i>Aizoaceae</i> |
| 51 <i>Salicaceae</i> | 71 <i>Portulacaceae</i> |
| 52 <i>Fagaceae</i> | 72 <i>Basellaceae</i> |
| 53 <i>Ulmaceae</i> | 73 <i>Caryophyllaceae</i> |
| 54 <i>Moraceae</i> | 74 <i>Nymphaeaceae</i> |
| 55 <i>Cannabaceae</i> | 75 <i>Cabombaceae</i> |
| 56 <i>Urticaceae</i> | 76 <i>Ceratophyllaceae</i> |
| 57 <i>Proteaceae</i> | 77 <i>Ranunculaceae</i> |
| 58 <i>Loranthaceae</i> | 78 <i>Berberidaceae</i> |
| 58A <i>Viscaceae</i> | 79 <i>Menispermaceae</i> |
| 59 <i>Santalaceae</i> | 80 <i>Winteraceae</i> |
| 60 <i>Olcaceae</i> | 81 <i>Annonaceae</i> |
| 61 <i>Aristolochiaceae</i> | 82 <i>Eupomatiaceae</i> |
| 62 <i>Polygonaceae</i> | 83 <i>Trimeniaceae</i> |
| 63 <i>Chenopodiaceae</i> | 84 <i>Monimiaceae</i> |
| 64 <i>Dysphaniaceae</i> | 85 <i>Lauraceae</i> |
| 65 <i>Amaranthaceae</i> | 86 <i>Cassythaceae</i> |
| 66 <i>Nyctaginaceae</i> | 87 <i>Papaveraceae</i> |
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| 68 <i>Gyrostemonaceae</i> | 89 <i>Cruciferae</i> |

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No. 112. POLYGALACEAE

By
JOY THOMPSON

EDITOR: MARY D. TINDALE

Formerly produced under the direction of K. Mair, 1964–1970

112. POLYGALACEAE

By Joy Thompson*

Flowers bisexual, more or less zygomorphic, rarely actinomorphic, usually arranged in terminal or axillary racemes (these occasionally corymb-like), often in terminal panicles or densely fasciculate and rarely solitary or paired in the axils. *Calyx* of 5 imbricate sepals, the sepals free or with the lower 2 united or rarely all united in a tube, subequal or with the 2 inner ones large, wing-like and often petal-like. *Corolla* of 3 or 5 petals, the petals free or variously united, occasionally with the calyx; frequently adnate to the base of and/or variously combined with the staminal tube, subequal or unequal, with the lower petal often keel-like and frequently pouched, lobed or crested. *Stamens* 10 or less, usually monadelphous or occasionally free, often united with the petals; the anthers basifixed, 1- or 2-locular, opening by a single and often oblique pore or a longitudinal slit. *Ovary* superior, usually 2-locular but occasionally 1-, 3- or up to 8-locular; the style simple but often variously dilated or lobed at the apex; the ovules 1 or occasionally more in each loculus, anatropous, pendulous from the central axis or occasionally parietal. *Fruit* usually a capsule, often conspicuously winged, occasionally fleshy with one or several seeds. *Seeds* with or without a conspicuous caruncle and often with long hairs.

Small trees, shrubs (often twining) or herbs, occasionally parasitic on roots. *Leaves* simple, alternate (or rarely opposite or verticillate), occasionally clustered; sometimes readily deciduous or reduced or absent.

A family of 18 genera and over 1000 species widespread in temperate and tropical regions of the world. Four genera are native to Australia, two to New South Wales. One African genus has a species naturalized in New South Wales. The family is of little economic significance in Australia but a number of species have been used in other countries, especially for medicines, dyes and fibres.

The above description covers the family in the broad sense but the genus *Xanthophyllum* is excluded from Polygalaceae by some botanists; see Dickison in Bot. J. Linn. Soc. 67: 103 (1973).

1. Sepals unequal, the 2 inner ones large and wing-like. Stamens 8, the anthers opening by apical pores.
2. Capsule usually cuneate and much-narrowed at the base, rarely almost orbicular. Seeds not carunculate, the hairs on the seeds usually lengthening into a coma *Comesperma* 1.
- 2.* Capsule obovate, obovate or ovate to orbicular. Seeds carunculate, the hairs on the seeds not lengthening into a coma *Polygala* 2.
- 1.* Sepals unequal or subequal, the 2 inner ones not large and wing-like. Stamens 7, the anthers opening by longitudinal slits *Muraltia* 3.

1. COMESPERMA Labill.

Nov. Holl. Pl. Spec. 2: 21 (1806); Persoon, Syn. Pl. 2: 275 (1807), as *Comaspermum*.

[Greek: *komê* = hair of the head; *sperma* = seed. The name is of neuter gender].

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Flowers usually in single or clustered terminal racemes, occasionally in axillary racemes or solitary, the pedicels short and usually expanding under the flower, each subtended by a bract and bearing bracteoles at the base. *Sepals* 5, the outer 3 free, though often with the 2 lower sepals overlapping, or with the lower 2 united, the inner or wing-sepals larger and petal-like. *Petals* 3, or 5 with 2 very much reduced or vestigial, united (to an extent which varies with the species) with the stamens into a tube open on the upper surface, the lowest petal keeled and usually lobed or pouched, the reduced petals, when present, attached outside the tube. *Stamens* 8, monadelphous and variously united with the petals for c. $\frac{1}{2}$ their length and then either diadelphous with sessile anthers or free; the anthers basifixed, 1-celled and opening by a large apical pore. *Ovary* 2-locular, laterally compressed, the style usually flattened and curved or geniculate below a broad, truncate, bi-lobed or bifurcate apex with the stigma at one side. *Ovules* 2, 1 in each loculus, anatropous, pendulous from the top of the central axis. *Fruit* a compressed capsule with a narrow marginal wing; loculicidally dehiscent at the margins. *Seeds* pubescent and usually with many hairs elongating into a coma; with no caruncle but with a raphe often extending along the adaxial surface and/or expanded into a membranous appendage at the opposite (apical) end.

Shrubs or subshrubs, often climbing, rarely spiny; often with a woody stock, the roots occasionally aromatic. *Leaves* alternate and simple, often readily deciduous or reduced to scales.

A genus of c. 25 species with a wide distribution in Australia, 8 species being found in New South Wales.

Moore & Betche, Handb. Fl. New South Wales: 36 (1893), record *C. calymega* Labill. from the southern interior of the State. Maiden & Betche, Census Pl. New South Wales: 120 (1916), also list this species. There are no specimens collected in New South Wales in the National Herbaria of Victoria or New South Wales.

The New Guinean *Bredemeyera papuana* Steenis, in Acta Bot. Neerl. 17: 380 (1968), appears from the description and illustration to be a species of *Comesperma* allied to *C. volubile*. The genus *Comesperma* is very natural. It was united with the New World genus *Bredemeyera* by St. Hilaire, Fl. Bras. Merid. 2: 36-37 (1829), but this has not been accepted by the majority of Australian authors. Benth, Fl. Austral. 1: 142 (1863), gives a discussion as does van Steenis. The information provided by van Steenis, who united the genera, serves more to distinguish than unite them.

1. Leafy erect plants. Stamens diadelphous above the middle, the anthers appearing to be sessile on the fused filaments.
2. Leaves with recurved to revolute margins, rarely flat but then the lower surface pale-coloured with the midvein conspicuous *C. ericinum* 1.
- 2.* Leaves flat or slightly keeled with inconspicuous venation.
3. Leaves acute or obtuse, mucronate. Outer sepals $\frac{1}{2}$ the length of the wing-sepals *C. sylvestre* 2.
- 3.* Leaves usually obtuse, not mucronate. Outer sepals c. $\frac{1}{2}$ as long as the wing-sepals *C. retusum* 3.
- 1.* Sparsely-leaved plants, often climbing or lax. Stamens free above the middle.
4. Stems twining.
5. Inflorescences axillary, the pedicels and calyx usually glabrous *C. volubile* 4.
- 5.* Inflorescences terminal on short branches, the pedicels with short appressed hairs, the calyx ciliate *C. integerrimum* 5.

4.* Stems stiff or lax but not twining.

6. Outer sepals almost as long as the wing-sepals. Fruit long-attenuate at the base *C. defoliatum* 6.

6.* Outer sepals $\frac{1}{2}$ to $\frac{3}{4}$ as long as the wing-sepals. Fruit not long-attenuate at the base.

7. Erect shrubs with stout stems *C. scoparium* 7.

7.* Low straggling plants with slender stems *C. sphaerocarpum* 8.

1. *Comesperma ericinum* DC., Prodr. 1: 334 (1824) '*ericina*'; J. D. Hooker, Fl. Tasmaniae 1: 32 (1855); F. Mueller, Pl. Indig. Colony Victoria 1: 190. (1860-2); Benth., Fl. Austral. 1: 146 (1863); Moore & Betehe, Handb. Fl. New South Wales: 35 (1893); Chodat in Engler & Prantl, Pflanzenfam. 3, 4: 338 (1896); F. M. Bailey, Queensland Fl.: 81 (1899); Rodway, Tasmanian Fl.: 11 (1903); Maiden & Betehe, Census New South Wales Pl.: 120 (1916); Domin, Biblioth. Bot. 22 (89^a): 859 (1927); Curtis, Stud. Fl. Tasmania 1: 58 (1956); Burbidge & Gray, Fl. Austral. Cap. Territory: 244 (1970); Beadle, Evans & Carolin, Fl. Sydney Region: 170 (1972); Beadle, Stud. Fl. NE. New South Wales 2: 154 (1973); J. H. Willis, Handb. Pl. Victoria 2: 196 (1973).—*Bredemeyera ericina* (DC.) Chodat in Engler & Prantl, Pflanzenfam. 3, 4: 331 (1896) sub fig. 177; Ewart et al., Field Nat. Club Census Pl. Victoria, ed. 1: 40 (1923) '*ericinum*'; Ewart, Fl. Victoria: 717 (1931) '*B. ericinum*'; van Steenis in Acta Bot. Neerl. 17: 383 (1968).

Comesperma coridifolium A. Cunn. in Field, Geogr. Mem. New South Wales: 337 (1825) '*coridifolia*' nomen nudum; Steetz in Lehmann, Pl. Preiss. 2: 315 (1848).

Comesperma latifolium Steetz in Lehmann, Pl. Preiss. 2: 295 (1848); Steetz, Rev. Gen. *Comesperma*: 5 (1848).—*Comesperma ericinum* var. *latifolium* (Steetz) Hook. f., Fl. Tasmaniae 1: 32 (1855).

Comesperma acutifolium Steetz in Lehmann, Pl. Preiss. 2: 296 (1848); Steetz, Rev. Gen. *Comesperma*: 6 (1848).—*Comesperma ericinum* var. *acutifolium* (Steetz) Hook. f., Fl. Tasmaniae 1: 32 (1855) '*acutifolia*'.

Comesperma linariifolium A. Cunn. ex Steetz in Lehmann, Pl. Preiss. 2: 297 (1848) '*linariaefolium*'; Steetz, Rev. Gen. *Comesperma*: 7 (1848).

Comesperma patentifolium F. Muell., Fragm. 1: 48 (1858); F. Muell., Pl. Indig. Colony Victoria 1: 190 (1860-2), where he considers it to be only a variety.—*Comesperma ericinum* var. *patentifolium* (F. Muell.) Benth., Fl. Austral. 1: 147 (1863); F. M. Bailey, Queensland Fl.: 82 (1899); Maiden & Betehe, Census New South Wales Pl.: 119 (1916).

Comesperma ericinum var. *oblongatum* R. Br. ex Benth., Fl. Austral. 1: 147 (1863); F. M. Bailey, Queensland Fl.: 82 (1899); Maiden & Betehe, Census New South Wales Pl.: 119 (1916).

Comesperma ericinum forma *aristulosum* Gandoger in Bull. Soc. Bot. France 60: 456 (1913).

Comesperma ericinum forma *esulifolium* Gandoger, loc. cit. 456.

Comesperma ericinum forma *tasmanicum* Gandoger, loc. cit. 456.

Comesperma ericinum forma *uncinatum* Gandoger, loc. cit. 456.

An erect perennial usually 1–1.5 m in height, often sparsely branched with clusters of erect branches especially in the upper part; the root aromatic. *Stems* terete or occasionally somewhat ridged below the conspicuous nodes, often with a reddish colour, glabrous but with dense minute tubercles or with the tubercles produced into minute hairs or pubescent with dense spreading or occasionally antrorse or retrorse hairs. *Leaves* alternate, usually 5–25 mm long and 1–4 mm wide, erect or spreading or even occasionally reflexed, usually oblong or linear but often broader above the centre or even tapering to the apex from a broad base, glabrous or rarely with minute hairs or elongated tubercles, the margins recurved or loosely revolute, rarely flat, the apex obtuse or acute and usually with a conspicuous often mucronate and reflexed point, the lower surface pale with the midvein obvious, the petiole short but thick. *Flowers* purple- or lilac-pink or white, 4–8 mm long in terminal racemes, often on short branches clustered near the top of the stems; the pedicels equal to or a little shorter than the flower, glabrous; the bracts scarious, ovate to narrow-lanceolate and usually shed well before the flower opens. *Outer sepals* free, broad-ovate, $\frac{1}{2}$ as long as the wing-sepals, the two lower overlapping for c. $\frac{1}{2}$ their length. *Wing-sepals* obovate or elliptical. *Lateral petals* narrowly obovate, shorter than the wing-sepals, almost equal to or slightly longer than the keel, joined in the lower $\frac{2}{3}$ to the staminal tube and in the lower $\frac{1}{2}$ to the keel. *Keel* somewhat pouched at the sides. *Stamens* diadelphous above the middle with 4 sessile anthers on each section. *Ovary* glabrous; the style flattened, strongly curved and broad in the upper part, the apex scarcely 2-lobed. *Fruit* usually 7–8 mm long, obovate-cuneate, contracting to a narrow attenuate base. *Seeds* 2–3 mm long, ovoid to oblong-elliptical, dark-coloured, pubescent, with a coma especially near the apex and a small membranous raphe on the adaxial surface and at the apex. *Fl.*: throughout the year but mostly Oct.–Dec.

DISTRIBUTION: Widespread on the Coast and Tablelands and occasional on the Central and South Western Slopes. Also in eastern parts of central and southern Queensland as well as in Victoria and Tasmania. Often but not invariably in or near the edges of forests, usually on sandy soils (some from rhyolite) and on rocky serpentine hillsides.

NORTH COAST: Mt Lindesay, *White* NSW 136023, 10.1921, *Constable* NSW 24336, 11.1952; Murwillumbah, *Forsyth* NSW 136007, 10.1898; Mt Warning, *Rodway* 2978, 10.1939, *Forsyth* NSW 120784, 11.1898 (ISOTYPE of forma *esnlifolium* Gandoger), *Constable* 3067, 6.1962; Whian Whian State Forest, *Hoogland & Hayes* 8587, 10.1962, *Constable* NSW 22367, 1.1953; near Tuntabla Falls, 5 miles [8 km] NE. of Nimbin, *Coveny* 4498 & *Rodd* 9.1972; Night Cap Range, *Coveny* 4457 & *Rodd* 9.1972; Byron Bay, *Boorman* NSW 136008, 8.1916; Grafton to Dalmorton, *Maiden & Boorman* NSW 136017, 11.1903; between Coff's Harbour and Woolgoolga, *Priest* NSW 136018, 1939; Wild Cattle Creek, Dorrigo State Forest, *White* 7571, 10.1930; Dorrigo Plateau, *Hewitt* NSW 136014, 9.1949; South West Rocks, *Coveny* NSW 136021, 9.1967; near Kempsey, *Rodway* NSW 135999, 10.1929; 3 miles [5 km] N. of Curricabark Creek, Curricabark, *Johnson* NSW 136003, 10.1953; Watchimbark Creek, 40 miles [64 km] NW. of Gloucester, *Blaxell & Coveny* 575, 9.1968; Bonny Hills to North Haven, *Salasoo* 4724, 1.1971; Kendall, *Bailey* NSW 136001, 8.1913, *NSW* 136012, 8.1932; Diamond Head, *Foster* NSW 136006, 1961; Crowdy Bay, *Duffy* NSW 136005, 9.1954; [Curricabark?] Barrington district, *Hyem* NSW 2061, 9.1946; Pacific Palms, S. of Forster, *Salasoo* 3397, 1.1967; Alum Mt, Bulahdelah (as Bulladeelah), *Maiden* NSW 136011, 10.1907; Bombah Point, Lake Myall, *Constable* NSW 19175, 1.1952; Nelson Bay, Lithgow NSW 136002, 12.1964; Weston, *Davis* NSW 136016, 9.1914; Wallsend, *Boorman* NSW 136009, 10.1899; Newcastle, *Leichhardt* NSW 136010. **CENTRAL COAST:** near Putty, *Salasoo* 2501, 10.1962; 1 mile (1.6 km) E. of Putty, *McKee* NSW 136049, 10.1952; Kanwal, NE. of Wyong, *Johnson* NSW 136004, 10.1953; Doyalson to Wyee, *Salasoo* 2395, 9.1962; Norah Head, *Constable* NSW 11518, 8.1949; Colo R., *Olsen* NSW 136043, 10.1966; Ourimbah State Forest, *de Beuzeville* NSW 136035, 3.1918; Wamberal, *Salasoo* 3738, 4.1970; Bowens Creek, Bilpin-Mt Irvine road, *Constable* NSW 16340, 10.1950; Calga, *Cross* NSW 136054, 8.1945; Canoe Grounds [Canoelands], Hawkesbury R., *Blakely & Shiress* NSW 136055, 10.1928; Avalon,

Fard NSW 136036, 6.1945; Kuringai, near Berowra, *Macara* NSW 136033, 10.1906; Berowra, *Baerman* NSW 136040, 10.1899; Kuring-gai Chase, *Goode* 37, 10.1954; Kuring-gai Chase between Bobbin Head and Mt Colah, *Goode* 546, 12.1960; Hornsby, *Ford* NSW 136042, 10.1947, *Blakely* NSW 136050, 10.1914; Linden, *Coveny* NSW 136048, 11.1965; Blaxland to Valley Heights, *Maiden & Cambage* NSW 135972, 11.1904; Glenbrook, *Hamilton* NSW 136025, 10.1914; Cheltenham, *Jahnsan* NSW 136024, 10.1945; St Ives, *Canstable* NSW 5291, 1.1948; Frenchs Forest, *Coveny* NSW 136056, 9.1965, *Tindale* NSW 136026, 10.1946; Narrabeen, *Waterhouse* NSW 136029, 3.1917; Castle Hill, *McGillivray* 1064, 1.1965; Quarantine, *Collie* NSW 136034, 9.1889; Port Jackson district, *Weber* NSW 136062, 11.1880; Port Jackson, *Leichhardt* NSW 136038; Bondi, *Cheel* NSW 136053, 8.1898; Long Bay, *Jahnsan* NSW 136057, 10.1905; near La Perouse, *Dixon* NSW 136058, 9.1903; Georges R district, *Alkin* NSW 136041, 11.1899; Georges R, *Staer* NSW 136060, 10.1910; Kogarah, *Camfield* NSW 136028, 10.1900; Oatley, *Camfield* NSW 136047, 10.1886; Botany Bay, *Helms* NSW 136061, 9.1900; Tabbigai, Cape Solander, *Jahnsan* NSW 136064, 10.1945; Kurnell, Botany Bay, *Boorman* NSW 136059, 5.1906, *NSW* 136063, 9.1914, *NSW* 136039, 7.1921; Captain Cooks Park, Kurnell, *Gaade* 336, 9.1961; Loftus, *Camfield* NSW 136051, 1.1895; between Appin and Bulli Lookout, *Crass* NSW 136027, 10.1932; Buxton, *Salasao* 2164, 10.1961; West Bargo, *NSW* 129971, 9.1895; Nepean Dam, Bargo, *Canstable* 26531, 12.1953; Barranggarry Mtn, *Maiden* NSW 135991, 9.1905; Woodhill Bluff, Berry-Brogers Creek road, *Rodway* NSW 135979, 9.1930; Browns Mtn, Cambewarra Range, *Rodway* NSW 135998, 12.1954, Nowra North, *Canstable* NSW 16291, 12.1950. SOUTH COAST: Nowra to Sassafras, *Salasao* 3114, 1.1966; Huskisson, *Rodway* NSW 135997, 11.1916; Bowen Island, Jervis Bay, *Rodway* NSW 135995, 9.1920; Naval College road, Jervis Bay, *Radway* 481, 8.1931; Jervis Bay, *Maiden* NSW 135982, 7.1899, *Radway* NSW 135984, 9.1928, *NSW* 135996, 9.1915; 2.8 miles [4.5 km] SW. of Jervis Bay, *Coveny* 3708, 10.1971; Conjola, *Heran* NSW 135988, 9.1899; west end of The Castle, *Currie* NSW 135983, 10.1954; Kioloa State Forest c. 10 miles [16 km] W. of Batemans Bay, *Schodde* 5107, 10.1966; Moruya, *Baorman* NSW 135975, 11.1911; Bega, *Fletcher* NSW 135978, 11.1888; near Merimbula, *Haagland* 7754, 10.1961; Yambulla, *Agst* NSW 135987, *NSW* 135977, 11.1915; Mt Imlay, *Baorman* NSW 135976, 12.1916; Green Cape, *Rodway* NSW 135986, 12.1920; Disaster Bay, near Bay Cliffs, *Canstable* NSW 30437, 10.1954; Womboyn, *Canstable* NSW 30436, 10.1954; Womboyn-Nadgee area, *Withead* NSW 135990, 9.1953; Nadgee, *Scobie* 62, 8.1970; Black Head, mouth of Nadgee R, *Canstable* 4389A, 8.1963. NORTHERN TABLELANDS: Pheasant Creek, Glen Elgin, *Boorman* NSW 136020, 12.1913; Guyra, *McKie* NSW 136015, 5.1929; Point Lookout, *St John* 24504, 12.1950; Styx R State Forest, *Canstable* NSW 37227, 4.1956; Styx via Hillgrove, *Baorman* NSW 136022, 1.1907; Big Hill, Kempsey-Armidale road, *Davis* NSW 136000, 1.1914. CENTRAL TABLELANDS: fire trail between Putty and Rylstone, SE. of Mt Munundilla, *Stary* 7551, 12.1960; Ilford, *Canstable* NSW 129995, 6.1950; Orange district, *Wiburd* NSW 129989, 12.1936; Wallerawang, *Maiden* NSW 129990, 11.1899; Hassans Walls, Lithgow, *Boorman* NSW 129996, 10.1914; Newnes to Eskbank, *Hamilton* NSW 130000, 11.1914; Clarence Siding, *Boorman* NSW 129997, 11.1901; Clarence, *Boorman* NSW 129983, 1.1914; between Mt Irvine and Mt Wilson, *Greggan* NSW 129985, 11.1897; near Du Faur's Rocks, Mt Wilson, *Jahnsan* NSW 129998, 9.1947; Mt Wilson, *Greggan* NSW 129994, 12.1896, *Farster* NSW 129982, 10.1926; Mt Tomah, *Maiden* NSW 129993, 11.1898; between Mt Tomah and Mt York, *Rodway* NSW 129975, 10.1936; Blackheath, *Althofer* 129974, 3.1947, *Vickery* NSW 129976, 9.1936, *Canstable* NSW 135974, 11.1946; Govetts Lcap, Blackheath, *Canstable* 6111, 6132, 9.1965; Blue Mountains, *Scarth-Johnson* 131, 12.1969; Medlow, *Hamilton* NSW 135971, 11.1914; Leura, *May* NSW 129984, 8.1935, *Hamilton* NSW 129973, 11.1914; Kings Tableland, *Canstable* NSW 53618, 10.1960; Trunkay, *Baorman* NSW 129999, 11.1918; Jenolan Caves, *Blakely* NSW 129981, 129986, 11.1899; Caves Creek, Kanangra Walls, *Jahnsan* NSW 129992, 10.1948; Kowmung R, c. 0.5 km below Tuglow Caves, *Rodd* 2300, 11.1972; Mt Werong, *Cambage* 3178, 12.1911; South Head to Mt Werong, *Johnson & Canstable* NSW 17684, 10.1951; Hill Top, *Burgess* B309, 10.1973; Colo, *Cheel* NSW 135973, 1.1912; Mittagong, *Dixon* NSW 129972; between Mittagong and Marulan, *Pullen* 3900, 10.1963; Burrangong, *Fletcher* NSW 129970, 11.1888; Robertson, *Maiden* NSW 129977, 11.1905; Belmore Falls, Robertson, *McBarron* 2434, 10.1948; near Fitzroy Falls, *Radway* NSW 135950, 11.1917; Wingello, *Boorman* NSW 129980, 12.1913, *NSW* 129979, 12.1921, *Blakely*, *Buckingham & Buckingham* NSW 129978, 11.1939. SOUTHERN TABLELANDS: Barbers Creek, *Maiden* NSW 129987, 1.1898, *Rumsey* NSW 129988, 10.1898; Goulburn, *Lumsden* NSW 135992, 11.1906; Nowra road 3 miles [5 km] E. of Nerriga, *Adams* 1480, 10.1965; Kowen, A.C.T., *McKee* 8821, 12.1961; Charlies Forest, *Baorman* NSW 135989, 3.1909; Currockbilly Mtn, *Baorman* NSW 135993, 3.1909; mountains E. of Braidwood, *Betche* NSW 135994, 12.1891; summit, Mt Budawang, *Rodway* 3063, 1.1940; Clyde Mtn, *McGillivray* 602, 10.1957; Clyde Mtn, bordering Currawang Creek, *Hartley* 14001, 10.1973; Majors Creek, *NSW* 135981, 10.1891; Gourcock Range 5 km SE. of Captains Flat on Braidwood road, *Briggs* 3999, 12.1970. CENTRAL WESTERN SLOPES: Holbrooke Castle, 5 miles [8 km] S. of "Holbrooke", *Whaite* 33590, 9.1969; Harvey Range State Forest, Trewilga, *Canstable* NSW 17579, 10.1957; Store Creek, *Althofer* NSW 129991, c. 5.1946. SOUTH WESTERN SLOPES: 4 miles [6.5 km] SW. of Carabost, *Lagan* NSW 84027, 12.1966.

This species is very variable in leaf-shape. Although a number of variants have been named, only *C. patentifolium* F. Muell. (from the Burnett R district, Queensland) is very distinctive. This form has spreading, often reflexed, almost deltoid leaves and is common not only in Queensland but also where the species extends to the western slopes in New South Wales. As similar plants are also found scattered throughout the range of the species elsewhere, with numerous intermediates, it is probable that this appearance is only a response to drier conditions.

2. *Comesperma sylvestre* Lindl. in Mitch., Trop. Australia: 342 (1848) '*sylvestris*'; F. Mueller, Fragm. 1: 49 (1858) '*silvestre*'; Benth., Fl. Austral. 1: 146 (1863); Tate, Handb. Fl. Extratrop. South Australia: 21, 208 (1890); Moore & Betche, Handb. Fl. New South Wales: 36 (1893); Tate, Rep. Horn Sci. Exp. Central Australia 3: 139 (1896); F. M. Bailey, Queensland Fl.: 81 (1899); Maiden & Betche, Census New South Wales Pl.: 120 (1916); Domin, Biblioth. Bot. 22 (89⁴): 859 (1927) '*silvestre*'; Gardner, Enum. Pl. Austral. Occ.: 71 (1930); Beard, W. Austral. Pl.: 57 (1965); Beadle, Stud. Fl. N.E. New South Wales 2: 155 (1973).—*Bredemeyera sylvestre* (Lindl.) Ewart et Davies, Fl. N. Territory: 160 (1917) '*B. sylvestre* (Lindl.) Chodat'; van Steenis in Acta Bot. Neerl. 17 (5): 383 (1968).

An erect perennial shrub usually 1–3 m in height, single-stemmed or with numerous thick stems arising from a woody stock; sparsely branched with clusters of erect branches in the upper part. *Stems* terete or occasionally somewhat ridged below the conspicuous nodes, glabrous, smooth or with dense tubercles or with tubercles produced into minute hairs or occasionally pubescent with dense rather spreading hairs. *Leaves* alternate, usually erect, 8–22 cm long and 2–6 mm wide, broadly to narrowly elliptical, occasionally oblanceolate or ovate-cordate (but not in N.S.W. material), glabrous and rather glaucous, thick but with the midvein visible often on both surfaces, the margins flat or slightly incurved, the apex acute with a straight point or obtuse with a short acuminate point, the petiole short but thick. *Flowers* purple-pink or white, 4–7 mm long, in terminal racemes often on short branches clustered near the top of the stems; the pedicels about equal in length to the flowers, glabrous; the bracts scarious, ovate to narrow-lanceolate and shed well before the flowers open. *Outer sepals* free, broad-ovate to almost orbicular, very obtuse, c. $\frac{1}{4}$ the length of the wing-sepals, the 2 lower overlapping for c. $\frac{1}{2}$ their length. *Wing-sepals* obovate. *Lateral petals* narrowly obovate, shorter than the wing-sepals, c. equal to the keel, joined at the middle to the staminal tube and at the extreme base to the keel. *Keel* somewhat pouched at the sides. *Stamens* diadelphous above the middle with 4 sessile anthers on each section. *Ovary* glabrous, the style flattened with the upper part broad and somewhat curved, the apex shortly 2-lobed. *Fruit* 7–13 mm long, obovate-cuneate, contracting abruptly to a long-attenuate base. *Seeds* 2–3 mm long, oblong-elliptical to semi-orbicular, dark-coloured, densely pubescent with a long coma especially from near the apex, the raphe limited to a trace on the adaxial side and at the apex. Fl.: Oct.–Jan.

DISTRIBUTION: North Coast ranges, northern part of the Northern Tablelands and North Western Slopes. Often in dry sandy areas, on hillsides or in forests. Also in inland Queensland, Northern Territory and northern Western Australia.

NORTH COAST: c. 7 miles [11 km] W. of Drake, at Crooked Creek, *Salasoo* 4625, 1.1971. **NORTHERN TABLELANDS:** between Wilsons Downfall and Boonoo Boonoo, *Dunn* NSW 129946, 12.1908; Boonoo Boonoo, *Boorman* NSW 129943, 11.1904; Jennings, *Boorman* NSW 129948, 10.1901; Torrington district, *Althofer* NSW 129939, 1951; Torrington, *Boorman* NSW 129949, 11.1919, *Andrews* 1817, 12.1907; Mt Lindesay, Nandewar Mtns, *Cabbage* 2406, 11.1909, *Rupp*

NSW 129941, 11.1912; Sinclairs Point near Mt Kaputar, *Johnson & Constable* NSW 129947, 11.1954. NORTH WESTERN SLOPES: NW. of Coonabarabran, *Salasoo* 2339, 1.1962; Newell Highway, *Buckley* NSW 129945, 12.1957; Warrumbungle Ranges, *Forsyth* NSW 129940, 10.1899; Forked Mountain, E. of Coonabarabran, *Boorman* NSW 129942, 9.1908.

3. *Comesperma retusum* Labill., Nov. Holl. Pl. Spec. 2: 22, t. 160 (1806) '*retusa*'; Candolle, Prodr. 1: 334 (1824) '*retusa*'; Steetz in Lehmann, Pl. Preiss. 2: 295 (1848); Steetz, Rev. Gen. *Comesperma*: 5 (1848); J. D. Hooker, Fl. Tasmaniae 1: 32 (1855); F. Mueller, Pl. Indig. Colony Victoria 1: 190 (1860-2); Benth, Fl. Austral. 1: 145 (1863); F. M. Bailey, Queensland Fl.: 81 (1899); Rodway, Tasmanian Fl.: 11 (1903); Maiden & Betche, Census New South Wales Pl.: 120 (1916); Curtis, Stud. Fl. Tasmania 1: 58 (1956); Cochrane et al., Flowers & Pl. Victoria: 164 (1968); Burbidge & Gray, Fl. Austral. Cap. Territory: 244 (1970); Beadle, Evans & Carolin, Fl. Sydney Region: 170 (1972); Beadle, Stud. Fl. NE. New South Wales 2: 154 (1973); J. H. Willis, Handb. Pl. Victoria 2: 343 (1973).—*Bredemeyera retusa* (Labill.) Ewart et al., Field Nat. Club Census Pl. Victoria, cd. 1: 40 (1923) '*retusum* (Steetz) Chod.'; Ewart, Fl. Victoria: 717 (1931) '*B. retusum* (Steetz) Chod.'; van Steenis in Acta Bot. Neerl. 17: 383 (1968).

An erect perennial shrub from a few cm to c. 1.5 m in height with one or several stems arising from the top of a stout aromatic taproot; usually sparsely branched but with clusters of erect branches in the upper part. Stems terete, often pink in colour, glabrous, covered with minute protuberances and with conspicuous swellings subtending the leaves. Leaves alternate, usually erect, 5-15 mm long and 2-3 mm wide, oblong or broader in the upper part, glabrous, flat or slightly keeled with the margins very slightly incurved, the venation inconspicuous. Flowers purple- or lilac-pink, 4-8 mm long in terminal, usually somewhat corymbose, racemes often on short branches clustered near the top of the stems, the pedicels about equal in length to the flowers, glabrous, the bracts scarious, narrow-lanceolate and shed well before the flowers open. Outer sepals free, broadly ovate-oblong to almost orbicular, very obtuse, c. $\frac{1}{2}$ as long as the wing-sepals. Wing-sepals obovate. Lateral petals narrowly obovate, shorter than the wing-sepals, about equal to the keel, united at the middle to the staminal tube and in the lower $\frac{1}{3}$ to the keel. Keel somewhat pouched at the sides. Stamens diadelphous above the middle with 4 sessile anthers on each section. Ovary glabrous, the style broad, flattened, and curved below the bilobed apex. Fruit 9-12 mm long, obovate-cuneate, contracting often abruptly to a long-attenuate base. Seeds usually 2 mm long, ovoid to oblong-elliptical, dark-coloured, pubescent with a coma especially from the sides and near the apex, a trace of the raphe visible along the adaxial surface and occasionally extending beyond the apex. Fl.: Sept.-Mar.

DISTRIBUTION: Tablelands and a few localities on the North and Central Coast of New South Wales, in permanently wet places, usually above 600 m but occasionally in coastal swamps. Also in southeastern Queensland and widespread in Victoria and Tasmania.

NORTH COAST: Bulahdelah (as Bulladelah), *Rupp* NSW 129861, 12.1923; Port Stephens, *Boorman* NSW 129881, 9.1911; Shoal Bay, Port Stephens, *Davis* NSW 129859. CENTRAL COAST: Centennial Park, *Cheel* NSW 129855, 10.1898. NORTHERN TABLELANDS: Tenterfield to Sandy Flat, *Maiden* NSW 129867, 12.1898; Barren Mt, Deer Park, *Boorman* NSW 129877, 11.1913; near Cathedral Rocks close to Round Mtn, 45 miles [73 km] E. of Armidale, *Williams* 12.1967 (NE); Oak Creek, c. 40 miles [65 km] E. of Armidale, *Wissmann* 11.1966 (NE); 7 miles [11 km] W. of Point Lookout, *Green* 1889, 11.1958 (NE); Guy Fawkes, *Boorman* NSW 129872, 11.1913; Barrington Tops, *Fraser & Vickery* NSW 129868, 1.1934, *Harrison* NSW 129871, 1.1925, *Munro* NSW 129860, 1.1953, *Pullen* 3793, 2.1963; near head of Polblue Swamp, Barrington Tops Plateau, *Briggs* 3170 & *Johnson*, 3.1970; Polblue Swamp, *McDonald* NSW 129875, 1.1955; Gloucester Tops, *Coveny* NSW 129851, 1.1966. CENTRAL TABLELANDS: Mount Victoria, *Maiden*

NSW 129863, 11-12.1889; Wentworth Falls, Coveny NSW 129873, 11.1965; Mt Werong, Cambage 3156, 12.1911; Mt Murray, Salasoo NSW 129874, 12.1945; Wingello, Boorman NSW 129854, 11.1899. SOUTHERN TABLELANDS: Charles Forest, Boorman NSW 129880, 12.1915; Mt Gingera, A.C.T., Moore 2279, 2.1953, Tindale NSW 26654, 1.1954; Brumby Flats, W. slope of Mt Gingera, Hoogland 10020, 1.1965; Buddong Creek, Bago Forest Reserve, de Beuzeville NSW 129876, 1.1917; Bimberi Peak, A.C.T., Cambage 3454, 1.1912; Cooleman Plain, Walker ANU 944; Tumberumba, Gordon NSW 129853, 1.1899; Porcupine Creek, N. of Yaouk Gap, A.C.T., Darbyshire 67, 12.1960; Tinderry Mountains, Canning B182, 12.1972; Kiandra-Yarrangobilly, Vickery NSW 129865, 1.1940; swamp near Alpine Creek, Whaithe NSW 129878, 12.1948; Kiandra district, Betche NSW 129866, 2.1897; Tumut Pond, Althofer NSW 129857, 2.1954; Happy Jacks Plain, Thompson NSW 129852, 1.1958; Dicky Cooper Creek, W. of Gungahran, Girtins 419, 1.1962; Hotel Kosciusko [Diggers Creek], Johnson & Constable NSW 18432, 1.1951; 0.5 km NW. of Diggers Creek Reservoir, Thompson 1470, 1.1972; Mt Kosciusko [district], Helms NSW 129858, 2.1893, Fraser NSW 129862, 2.1940, Harris NSW 129879; Pretty Point, Maiden & Forsyth NSW 129856, 1.1899; Bullrock Mtn, Bäuerlen NSW 129869, 3.1890; Thredbo R., Maiden & Forsyth NSW 129864, 1.1899.

4. *Comesperma volubile* Labill., Nov. Holl. Pl. Spec. 2: 24, t. 163 (1806) '*volubilis*'; Candolle, Prodr. 1: 334 (1824); Steetz in Pl. Preiss. 2: 303 (1848); Steetz, Rev. Gen. *Comesperma*; 12 (1848); J. D. Hooker, Fl. Tasmaniae 1: 31 (1855); F. Mueller, Pl. Indig. Colony Victoria 1: 191 (1860-2); Bentham, Fl. Austral. 1: 144 (1863) in part; F. Mueller, Fragm. 11: 1 (1878) in part; Moore & Betche, Handb. Fl. New South Wales: 35 (1893); Chodat in Engler & Prantl, Pflanzenfam. 3, 4: 325, 338 (1896); F. M. Bailey, Queensland Fl. 80 (1899) excl. *C. tortuosum* Steetz; Rodway, Tasmanian Fl.: 11 (1903); Maiden & Betche, Census New South Wales Pl. 120 (1916); Curtis, Stud. Fl. Tasmania 1: 58 (1956); Cochrane et al., Flowers & Pl. Victoria: 123 (1968); Burbidge & Gray, Fl. Austral. Cap. Territory: 244 (1970); Beadle, Evans & Carolin, Fl. Sydney Region: 171 (1972); Beadle, Stud. Fl. NE. New South Wales 2: 155 (1973); J. H. Willis, Handb. Pl. Victoria 2: 342 (1973).—*Bredemeyera volubile* (Labill.) Ewart et al., Field Nat. Club Census, Pl. Victoria, ed. 1: 40 (1923) '*volubile* (Labill.) Chod.'; Ewart, Fl. Victoria: 716 (1931) '*B. volubile* (Steetz) Chod.'; van Steenis in Acta Bot. Neerl. 17 (5): 384 (1968).

Comesperma gracile Paxt., Mag. Bot. 5: t. 145 (1838).

Comesperma volubile var. *micranthum* Steetz in Pl. Preiss. 2: 303 (1848) '*micrantha*'.

Comesperma volubile var. *album* F. M. Bail., Queensland Fl.: 80 (1899) '*alba*'.

A slender often leafless or sparsely leaved perennial, frequently scrambling in dense masses over shrubs 1-2 m in height. *Stems* twining, irregularly ridged or angled, glabrous, often with minute tubercles along the ridges, very rarely with a few short, appressed, antrorse hairs. *Leaves* alternate, up to 5 cm in length, linear, elliptical, often tapering towards the acute apex, or rarely ovate, glabrous, thin in texture, usually 1-5 mm wide, tapering at the base to a short petiole, the lower surface paler with the midvein conspicuous, the margins recurved or revolute at the extreme edge; often reduced or deciduous over much of the plant. *Flowers* purplish blue, blue, mauve, pink or white, 4-8 mm long, in axillary racemes or occasionally terminal on short side-branches; the pedicels shorter than or almost equal in length to the flowers, glabrous or rarely with scattered appressed hairs; the bracts scarious, ovate to lanceolate but so evanescent as to be rarely seen. *Outer sepals* free, thin, ovate to orbicular, usually obtuse, the 2 lower ones overlapping for much of their length; $\frac{1}{2}$ - $\frac{1}{3}$ as long as the wing-sepals. *Wing-sepals* broadly ovate and usually contracted abruptly below into a claw. *Lateral petals* spatulate, shorter than the wing-sepals, slightly longer than the keel and joined with it and the staminal tube for c. $\frac{1}{2}$ their length. *Keel* with 2 oblong lateral lobes and joined in the lower $\frac{1}{3}$ to the tube. Two vestigial extra petals are occasionally found as deltoid flaps joined

to the outside of the tube a little above the base. *Stamens* free above the middle. *Ovary* glabrous, the style flattened and strongly curved or geniculate, the apex 2-lobed. *Fruit* usually 10–15 mm long, obovate-cuneate, tapering or contracting to a long-attenuate base. *Seeds* c. 3 mm long, oblong to narrow-elliptical, dark-coloured and strongly rugose, pubescent with a long coma especially from the sides and near the apex, a trace of the raphe visible along the adaxial surface and projecting beyond the seed. *Fl.*: July–Dec.

DISTRIBUTION: Coast and Tablelands of New South Wales, in a variety of habitats from wet and dry sclerophyll forest to sandy coastal heath. Also in southeastern Queensland, Victoria and Tasmania.

NORTH COAST: Night Cap Range, Whian Whian State Forest, *Coveny* 4464 & *Rodd* 9.1972; Gloucester Buckets, c. 1 mile [1.6 km] W. of Gloucester, *Coveny* NSW 129892, 9.1967, *Maiden* NSW 129893, 9.1897. **CENTRAL COAST:** near Mt Warrawolong, 11 miles [18 km] WNW. of Morisset, *Story* 6696, 10.1959; Patonga Creek, *Blakely* NSW 129905, 9.1936; Hawksbury R., *Rupp* NSW 129906, 10.1916; Cowan, *Anderson & Boorman* NSW 129885, 8.1921; Spring Creek, Hornsby, *Blakely* NSW 129884, 10.1914; Wahroonga, *Dixon* NSW 129886, 8.1903; Elanora, *Mair* NSW 42238, 10.1957; Bilgola Heights, *Constable* NSW 20502, 9.1952; Newport, *Ford* NSW 129887, 8.1945; Deep Creek, Narrabeen, *Coveny* NSW 129891, 10.1966; Frenchs Forest, *Coveny* NSW 129890, 9.1965; Springwood, *Maiden & Cambage* NSW 129903, 11.1904; Flat Rock, Middle Harbour, *Helms* 63, 9.1900; Mosman (as Mossmans) Bay, *NSW* 129904, 9.1894; Oatley, *Fletcher* NSW 129902, 8.1887; Woolwash, Campbelltown, *McBarron* 8320, 10.1963, 9484, 10.1964; Forest Reserve No. 3, [Upper] Nepean R., *Mitchell* NSW 129889, 9.1971. **SOUTH COAST:** near Wogamia, Shoalhaven R., *Rodway* NSW 129913, 7.1928; beach near Naval College, Jervis Bay, *Rodway* NSW 129907, 10.1923; Quiera, *Cole* NSW 129912, 10.1945; Red Head, *Rodway* 3114, 8.1940; Kioloa State Forest, *Evans* 2513, 10.1966; Nerrigundah-Belowra Road, *Constable* NSW 129910, 9.1953; Bermagui, *Dunn* 128, 8.1917; Merimbula-Pambula, *Boorman* NSW 129911, 8.1915; Narrabarba, *Constable* NSW 129915, 10.1954; Disaster Bay near Bay Cliffs, *Constable* NSW 129914, 10.1954; Womboyn-Nadgee area, *Wilheford* NSW 129908, 9.1953; Nadgee, *Scobie* NSW 129909, 8.1970. **NORTHERN TABLELANDS:** Pheasant Mtn, 25 miles [40 km] NE. of Guyra, *Wissman* 10.1971, 4.1972 (NE); Round Mtn, Ebor, *Floyd, Burgess & Williams* 9.1972 (Forestry Comm., Coffs Harbour); Daisy Plain, Carrai State Forest, *Hayes* 10.1959 (Forestry Comm., Coffs Harbour); Tomalla State Forest, *Floyd* 10.1959 (Forestry Comm., Coffs Harbour). **CENTRAL TABLELANDS:** Green Gully, Glen Davis, *Constable* 7212, 10.1966; Mt Wilson, *Gregson* NSW 129901, 1.1902, 129899, 6.1906, *Johnson* NSW 129900, 9.1949; Victoria Falls, 3 miles [5 km] ENE. of Mt Victoria, *Constable* 6123, 9.1965; Megalong Valley, *Johnson* 178, 9.1945; Katoomba Falls to Leura Falls, *Salasoo* 2148, 10.1961; Jcnolan Caves, *Blakely* NSW 129898, 10.1899; Yerranderie, *Cambage* 2302, 10.1909; Colong Causeway-Mt Colong, *Olsen* 1590, 9.1973; Hill Top, *Cheel* NSW 129897, 7.1914. **SOUTHERN TABLELANDS:** Barbers Creek, *Rumsey* NSW 129896, 9.1898; Blue Range Forest, A.C.T., *Gray* 5757, 10.1965; Uriarra, A.C.T., *McKee* 965, 4.1954; Brindabella Range near Blundell, A.C.T., *Hoogland* 6283, 11.1956; Palarang Range c. 10 miles [16 km] SE. of Hoskinstown, *Pullen* 3874, 10.1963; about 10 miles [16 km] ESE. of Braidwood, *Craven* 581, 9.1965; a few miles E. of Braidwood, *McGillivray* 596, 10.1957; Sugar-loaf Mtn near Braidwood, *Boorman* NSW 129895, 9.1915; Clyde Road, *Bauerlen* NSW 129894, 9.1898; Clyde Mtn, *Walker* ANU 1108, 9.1963.

References to this species based on specimens collected outside the four eastern States have been omitted, as I have treated the species in a narrow sense. Further study will probably show that material from South and Western Australia falls outside the limits of *C. volubile* sens. str. Steetz, in *Lehm. Pl. Preiss.* 2: 302 (1848), restricts it to southeastern Australia and describes blue-flowered Western Australia plants as *C. ciliatum* and *C. tortuosum*. *C. volubile* and *C. integerrimum* appear to approach one another. Most of the specimens which I have seen from South and Western Australia as well as some from Victoria cannot be definitely placed if the strict circumscription of each species is retained (see notes under *C. integerrimum*). The vestigial petals attached to the outside of the floral/staminal tube appear to be less frequent in the northern part of the range of *C. volubile*.

5. *Comesperma integerrimum* Endl. in Huegel, Enum. Pl.: 7 (1837); Steetz in Pl. Preiss. 2: 305 (1848); Steetz, Rev. Gen. *Comesperma*: 15 (1848); Bentham, Fl. Austral. 1: 145 (1863) at least for the most part; F. Mueller, Fragm. 11: 1 (1878); Chodat in Engler & Prantl, Pflanzenfam. 3, 4: 338 (1896); Gardner, Enum. Pl. Austral. Oec.: 71 (1930); Blackall & Grieve, Western Austral. Wildfl. 1: 261 (1954).—*Bredeneyera integerrima* (Endl.) Steenis in Acta Bot. Neerl. 17: 383 (1968).

Comesperma scandens Steud. in Pl. Preiss. 1: 211 (1845).

A much-branched sparsely-leaved climber. *Stems* twining, terete, regularly and conspicuously ridged with a short, appressed antrorse pubescence (usually dense but occasionally sparse) between the ridges. *Leaves* alternate, up to 3 cm in length, usually oblanceolate with an obtuse or less frequently acute apex, glabrous, thick, tapering at the base to a short petiole, the margins flat or somewhat recurved; often reduced or deciduous in the greater part of the plant. *Flowers* probably greenish yellow (but little information can be obtained from the specimens seen), 5–8 mm long, terminal on short side-branches, the pedicels much shorter than the flowers, with short appressed hairs, the bracts usually broad-lanceolate, the bracteoles narrow-lanceolate, occasionally persisting under the flower but usually all so evanescent as to be rarely seen. *Outer sepals* free, ciliate on the margin, almost orbicular, obtuse, the 2 lower almost completely overlapping, $\frac{1}{3}$ as long as the wing-sepals or slightly longer. *Wing-sepals* broad-obovate, occasionally broader than long, clawed at the base. *Lateral petals* spatulate, shorter than the wing-sepals, longer than the keel, joined with the keel and the staminal tube in the lower $\frac{1}{3}$. *Keel* pouched with 2 lateral lobes and joined in the lower $\frac{1}{3}$ to the tube; two small deltoid vestigial petals are joined only by their extreme bases to the outside base of the tube. *Stamens* free above the middle. *Ovary* glabrous, the style flattened, strongly curved or geniculate, the upper part broad towards the 2-lobed apex. *Fruit* usually 2–3 cm long, long-cuneate, tapering uniformly to the base. *Seeds* c. 15 mm long, sub-cylindrical and tapering to the apex, pale-coloured and scarcely rugose, with a long coma from all parts of the surface but especially from the ends, the raphe absent. Fl.: Oct.

DISTRIBUTION: Central Western Slopes of New South Wales, in dry sandy soils. Also in inland Western Australia.

CENTRAL WESTERN SLOPES: Wyalong, Campbell NSW 129950, 10.1901; Kildary, Baker NSW 116541, 10.1917.

The flower-colour given by Beard, W. Austral. Pl., ed. 2: 77 (1970), extends the colour-range shown in specimens which I have examined. As I have not seen his material, I hesitate to assume it is conspecific.

The limits of this species are hard to define. I have treated the species here in a narrow sense, as the New South Wales material is well within *C. integerrimum* sens. str., which differs from *C. volubile* in several striking seed characters as well as in pubescence, robustness, flower-colour and in having terminal inflorescences and extra, almost free, vestigial petals. I have seen typical *C. integerrimum* only from Western Australia and inland New South Wales. However, many specimens from Western Australia, South Australia and even Victoria resemble *C. integerrimum* in some but not all of its characteristic features. Some aberration in Western Australia could be explained by hybridization with *C. ciliatum* but certainly not all. It seems most likely that climatic changes have led to a breakdown of isolation between *C. integerrimum* and *C. volubile* which were formerly separated in distinct ecological

niches, with a resultant spread of intermediate forms along the southern coast of the continent into a newly developed habitat. Further collection and study in that region will be necessary to show whether this is the situation or whether these two species can be defined with wider circumscription; whether one or more other species are present; or whether an east-west and/or north-south cline links *C. integerrimum* with *C. volubile*.

6. *Comesperma defoliatum* F. Muell., Pl. Indig. Colony Victoria 1: 189 (1860-2); Bentham, Fl. Austral. 1: 148 (1863); Moore & Betche, Handb. Fl. New South Wales: 36 (1893); F. M. Bailey, Queensland Flora: 82 (1899); Rodway, Tasmanian Fl.: 11 (1903); Maiden & Betche, Census New South Wales Pl. 120 (1916); Curtis, Stud. Fl. Tasmania 1: 58 (1956); Beadle, Evans & Carolin, Fl. Sydney Region: 171 (1972); Beadle, Stud. Fl. NE. New South Wales 2: 155 (1973); J. H. Willis, Handb. Pl. Victoria 2: 343 (1973).—*Bredemeyera defoliata* (F. Muell.) Ewart et al., Field Nat. Club Census Pl. Victoria, ed. 1: 42 (1923) '*defoliatum* (F.v.M.) Chod.'; Ewart, Fl. Victoria: 716 (1931) '*B. defoliatum* (F.v.M.) Chod.'; van Steenis in Acta Bot. Neerl. 17: 383 (1968).

A slender plant with few or numerous erect leafless stems usually 15–60 cm in height arising from a usually branched woody stock. *Stems* glabrous, rarely with minute tubercles, irregularly angled and/or ridged with ridges arising below the conspicuous nodes, the side-branches few and erect. *Leaves* alternate, usually 8 mm long, elliptical, tapering at the base, glabrous, thick with the venation obscure, the apex acute; very rarely seen and then only on the lower part of the plant, usually reduced to linear scales and soon deciduous. *Flowers* blue or purplish-blue, 3–5 mm long, in terminal racemes, the pedicels glabrous, shorter than the flowers, the bracts scarious, lanceolate to oblanceolate and shed well before the flower opens. *Outer sepals* free, oblong to obovate-oblong, obtuse, the upper often somewhat pouched at the base, the lower somewhat overlapping, almost as long as the wing-sepals. *Wing-sepals* obovate, tapering at the base to a very short claw. *Lateral petals* spatulate, acuminate, shorter than the wing-sepals, longer than the keel, joined up to the middle with the keel and staminal tube. *Keel* pouched at the sides. *Stamens* free above the middle. *Ovary* with a few short hairs, the style rather flattened, very broad and somewhat curved in the upper part with the apex bifurcate. *Fruit* 7–11 mm long, obovate but contracted to a long narrow base. *Seeds* 1–3 mm long, ovoid to almost orbicular, dark-coloured, pubescent with a coma mostly from the apical end, the raphe absent. Fl.: Nov.–May.

DISTRIBUTION: Northern and Central Tablelands, the North and Central Coast and far north of the South Coast. In wet sandy heath or swamp. Also in southeastern Queensland, Victoria and Tasmania.

NORTH COAST: Wardell, NSW 129957, 11.1893; Evans Head, Coveny 4662, 11.1972; Jerusalem Creek, Associated Minerals Consolidated Limited 410, 2.1974; 2 miles [3 km] S. of Yamba, Williams 11.1970 (NE); Waihou Swamp, Conglomerate State Forest, Floyd 5.1973 (Forestry Comm., Coffs Harbour); beach S. of Seal Rocks, Whaithe 3457A, 1.1971; Nelson Bay, Lithgow 105, 2.1965. **CENTRAL COAST:** Cowan to Jerusalem Bay, Salasoo 2130, 4.1961; swamp about 1½ miles [2 km] N. of Cowan Station, Blakely & Shiress NSW 129953, 2.1921; Cowan, Blakely NSW 129955, 5.1926; Long Point Swamp, Berowra Creek, Hornsby, Blakely NSW 129954, 3.1916; Narrabeen, Cheel NSW 129951, 12.1913; Botany Bay, Betche NSW 129951, 1.1896; Maddens Plains, Princes Highway, c. 40 miles [65 km] S. of Sydney, Blaxell 107, 12.1968. **SOUTH COAST:** near Pacific City, Jervis Bay, Rodway 340, 354, 2.1931; Bowen Island, Jervis Bay, Rodway NSW 129959, 12.1925; Moonie Creek, Jervis Bay, Rodway NSW 129960, 2.1921, NSW 129961, 12.1923. **NORTHERN TABLELANDS:** 4 miles [6.5 km] NE. of Boonoo Boonoo, Williams 11.1966 (NE); Boonoo Boonoo, Boorman NSW 129956, 2.1905; Blather Creek, c. 6 miles [10 km] N. of Torrington, Williams 11.1966 (NE). **CENTRAL TABLELANDS:** on fire-trail

between Kekeelbon Mtns and Mt Coricudgy, *McGillivray 1617*, 2.1966; Grose R watershed near Bell-Mt Wilson road, *Gregson NSW 129963*, 1.1900; Blackheath, *Constable NSW 5267*, 2.1948, *Maiden NSW 129964*, 1.1904; Leura, *Hamilton NSW 129965*, 12.1902, *Sulman NSW 129968*, 1.1909; Wentworth Falls, *Fletcher NSW 129967*, 12.1888; Kings Tableland, Wentworth Falls, *Hamilton NSW 129966*; Hill Top, *Cheel NSW 129962*, 2.1912; Mittagong, *Dixon NSW 129962*.

7. *Comesperma scoparium* Drummond in Journ. Bot. (Hook.) 2: 369 (1840); Steetz in Lehm., Pl. Preiss. 2: 309 (1848); Steetz, Rev. Gen. *Comesperma*: 19 (1848); F. Mueller, Fragm. 1: 148 (1859); F. Mueller, Pl. Indig. Colony Victoria 1: 186 (1860–2); Bentham, Fl. Austral. 1: 143 (1863); Tate, Handb. Fl. Extratrop. South Australia: 208 (1890); Moore & Betche, Handb. Fl. New South Wales: 35 (1893); Chodat in Engler & Prantl, Pflanzenfam. 3, 4: 324, 338 (1896); Maiden & Betche, Census New South Wales Pl.: 120 (1916); J. M. Black, Fl. South Australia 2: 346 (1924); Gardner, Enum. Pl. Austral. Occ.: 71 (1930); J. M. Black, Fl. South Australia, [ed. 2] 2: 504 (1948); Blackall & Grieve, Western Austral. Wildfl. 1: 260 (1954); Beard, W. Austral. Pl., ed. 2: 77 (1970); J. H. Willis, Handb. Pl. Victoria 2: 343 (1973).—*Bredemeyera scoparia* (Drummond) Ewart et al., Field Nat. Club Census Pl. Victoria, ed. 1: 40 (1923) '*scoparium* (Steetz) Chod.'; Ewart, Fl. Victoria: 716 (1931) '*B. scoparium* (Steetz) Chod.'; van Steenis in Acta Bot. Neerl. 17: 383 (1968).

An erect perennial shrub usually c. 50 cm in height with a number of branches arising from the top of a tap-root and much branched, the side-branches erect, stiff and leafless. *Stems* terete but deeply sulcate with the ridges rounded, covered with dense minute tubercles and glabrous except for a patch of dense short hairs above each of the swollen nodes. *Leaves* alternate, reduced to long-tapering deltoid scales, usually closely appressed at least at the base. *Flowers* deep blue, c. 5 mm long, solitary in the axils of the leaf-scales, the pedicels to 2 mm long, glabrous, the bracts several, on the base of the pedicels, imbricate, concave, ovate or almost orbicular, obtuse, scarious but with a conspicuous thickening below the apex, persistent. *Outer sepals* free, obovate-oblong or occasionally ovate-oblong, broadly obtuse with a thick callus below the concave apex, a little more than $\frac{1}{2}$ as long as the wing-sepals, the 2 lower somewhat overlapping. *Wing-sepals* very broadly obovate, tapering at the base to a short claw. *Lateral petals* narrowly oblanceolate, about equal in length to the wing-sepals, longer than the keel, joined near the base with the staminal tube. *Keel* pouched at the sides and narrowed at the base, the lower $\frac{1}{2}$ joined to the staminal tube. *Stamens* free above the middle. *Ovary* glabrous, the style flattened, almost straight, widening and curving below the broad shortly 2-lobed apex. *Fruit* 4–7 mm long, broad-cuneate to obovate with a thick, textured rim. *Seeds* 3 mm long, oblong, pale, with a short fine pubescence but no coma, the raphe a trace along the adaxial surface but extending beyond the seed into a pubescent membrane almost as long as the seed. Fl.: July–Sept.

DISTRIBUTION: In dry scrub or woodland. In Victoria, South Australia, Western Australia, Northern Territory and probably in far southwestern New South Wales. Bentham, Fl. Austral. 1: 143 (1863), cites a specimen 'N.S. Wales. Desert of the Darling, near Fitzgerald Ranges. F. Mueller'. The specimen, Hattah, Victoria, *Henshall NSW 116540*, 7.1966, from close to the border indicates the possibility that the species may still be found on the New South Wales side of the border.

8. *Comesperma sphaerocarpum* Steetz in Lehm., Pl. Preiss. 2: 314 (1848); Steetz, Rev. Gen. *Comesperma*: 24 (1848); Bentham, Fl. Austral. 1: 143 (1863); F. Mueller, Fragm. 1: 145 (1859); Moore & Betche, Handb. Fl. New South Wales:

35 (1893); F. M. Bailey, Queensland Fl.: 80 (1899); Maiden & Betche, Census New South Wales Pl.: 120 (1916); Beadle, Evans & Carolin, Fl. Sydney Region: 171 (1972); Beadle, Stud. Fl. NE. New South Wales 2: 155 (1973).—*Bredemeyera sphaerocarpa* (Steetz) Steenis in Acta Bot. Neerl. 17: 383 (1968).

An inconspicuous plant to c. 20 cm in height with a few or occasionally many slender, straggling and usually leafless stems arising from a woody and often branched stock. *Stems* rather irregularly angular with some ridges arising below conspicuous nodes; glabrous or occasionally with scattered stiff hairs or elongated tubercles, the side-branches few and erect. *Leaves* alternate, usually < 8 mm in length, oblanceolate to obovate, tapering at the base, glabrous, thick with the venation obscure, the apex shortly acute; seen only rarely and then only on the lower part of the stems, usually all reduced to deltoid or linear-lanceolate scales. *Flowers* bright- or purplish blue, 3–8 mm long, in lax terminal racemes; the pedicels shorter than the flowers, glabrous or with short erect hairs; the bracts scarious, ovate to lanceolate and shed well before the flower opens. *Outer sepals* free, ovate or obovate-oblong, usually obtuse, occasionally with a short acuminate tip, $\frac{2}{3}$ as long as the wing-sepals, the upper somewhat pouched at the base, the 2 lower more or less overlapping. *Wing-sepals* very broadly obovate, tapering at the base. *Lateral petals* oblanceolate, acuminate, with hairs near the tip, somewhat shorter than the wing-sepals but longer than the keel, joined up to the middle with the keel and the staminal tube. *Keel* pouched at the sides. *Stamens* free above the middle. *Ovary* pubescent, the style broad, flattened, straight or curved below the truncate and slightly oblique apex. *Fruit* c. 4 mm long, broadly ovate-cuneate to almost orbicular. *Seeds* 2.5 mm long, broadly ovoid, pale-coloured, densely pubescent with longer hairs towards the end but no real coma, the raphe a trace along the ventral edge of the seed and extending beyond to form a short membranous pubescent appendage. Fl.: Oct.–May.

DISTRIBUTION: Widespread, especially on the Coast and Tablelands, in dry sclerophyll heath or forest, but not frequently collected. Also in southeastern Queensland.

NORTH COAST: Smoky Cape, *Betche NSW 129932*, 2.1882; 6 miles [10 km] N. of Crescent Head, *Smith 4.1971* (NE); Bulahdelah (as Bulladelah), *Rupp NSW 129933*, 11.1923. **CENTRAL COAST:** Boorai ridge above Colo R gorge, *Coveny 9147 & Hind 2.1977*; $\frac{1}{2}$ mile [0.8 km] S. of Wismans Ferry, *Briggs NSW 129922*, 10.1965; Agnes Banks, near Richmond, *Bryant 233*, 2.1977; Coasters Retreat, Pittwater, *Thompson 2204*, 12.1974; Long Point, Berowra Creek, *Blakely & Shiress NSW 129921*, 3.1916; Hornsby, *NSW 129920*, 11.1914; Belrose, *Johnson NSW 129919*, 12.1954; Epping, *Johnson 954*, 4.1947; Cabramatta, *Fletcher NSW 129918*, 11.1889; Hillview, W. of Casula, *Coveny NSW 129917*, 10.1965; 3.2 km SW. of Casula, *Coveny 5345*, 11.1973; Douglas Park, *Briggs NSW 129916*, 11.1965; 19.2 km NE. of Robertson, *Coveny 850*, 2.1969. **SOUTH COAST:** Nowra, *Rupp NSW 129934*, 1.1917, *Rodway NSW 129936*, 4.1917; near Pacific City, Jervis Bay, *Rodway NSW 129937*, 2.1931; Tomerong-Sassafras road, near Nowra road junction, *Rodd NSW 129938*, 12.1968; $1\frac{1}{2}$ miles [2.5 km] SW. of Tianjara Falls, Pigeon House Range, *Briggs NSW 129935*, 12.1961; Cape Dromedary, *Thompson 2080*, 5.1974. **NORTHERN TABLELANDS:** Tenterfield, *Betche NSW 129931*, 10.1886. **CENTRAL TABLELANDS:** Lawson, *Maiden & Cambage NSW 129925*, 11.1904; Mittagong to Bullio, *Cheel NSW 129926*, 11.1919; Mittagong, *Dixon NSW 129927*, 1.1900; Hume Highway, Penrose State Forest, *Thompson NSW 129928*, 1.1958; Wingello, *Boorman NSW 129929*, 12.1899. **SOUTHERN TABLELANDS:** Mt Currockbilly, *Rodway NSW 129923*, 1.1940; Mt Budawang, *Rodway NSW 129924*, 1.1940. **NORTH WESTERN SLOPES:** Near Warialda, *Rupp NSW 129930*, 12.1905.

2. POLYGALA L.

Sp. Pl. 2: 702 (1753); Gen. Pl., ed. 5: 315 (1754).

[A latinization of the Greek: *polys* = much; *gala* = milk. A reference to the belief that the eating of some members of the genus caused animals to produce more milk].

Flowers in terminal or lateral or rarely axillary spikes or racemes occasionally contracted into dense heads, rarely paniculate, each subtended by a small, often deciduous bract and with 2 deciduous or persistent bracteoles. *Sepals* 5, unequal, deciduous or persistent, the two inner sepals (the wing-sepals) large and often petal-like. *Petals* 3; the 2 upper (lateral) ones adnate at the base to the staminal tube; the lower (the keel) boat-shaped, clawed, often auricled above the claw, entire or with a dorsal crest, the crest consisting of 2 variously divided or entire appendages. *Stamens* 8, monadelphous, the filaments entirely joined or free for part of their length, the anthers basifixed, 2-celled and opening by a common terminal pore. A *disc* is present in some species. *Ovary* 2-locular, laterally compressed; the style usually curved, often hooked, variously dilated at the apex, with 1 or 2 apical and/or lateral stigmas. *Ovules* 2, 1 in each loculus, anatropous, pendulous from the top of the central axis. *Fruit* a compressed capsulc, loculicidally dehiscent at the margins, often with marginal wing. *Seeds* usually dark-coloured and bearing hairs; at the base bearing a cap-like entire or lobed caruncle and occasionally at the apex a variously shaped appendage.

Annual or perennial herbs, shrubs or small trees; occasionally spiny, often with a woody stock, the roots often aromatic. *Leaves* simple, usually alternate or occasionally opposite or verticillate, rarely tending to be deciduous.

A large genus widespread especially in tropical areas. Approximately 15 species extend to northern Australia but only 2 reach New South Wales. Two African species grown as garden shrubs are naturalized to a limited extent.

1. Herbs, sometimes woody at the base and often prostrate or ascending.
 2. Leaves usually ovate or narrowly ovate, with conspicuous reticulate venation. Fruit with a broad wing *P. japonica* 1.
 - 2.* Leaves usually obovate, narrowly obovate or narrowly elliptical, the venation inconspicuous. Fruit with a very narrow wing *P. linariifolia* 2.
- 1.* Erect shrubs.
 3. Flowers in long terminal racemes. Leaves narrow, rarely more than 5 mm broad *P. virgata* 3.
 - 3.* Flowers in short terminal racemes. Leaves broad, often 1 cm or more in width *P. myrtifolia* 4.

1. *P. japonica* Houtt., Handl. 10: t. 62, fig. 1 (1779); Candolle, Prodr. 1: 324 (1824); Bentham, Fl. Austral. 1: 138 (1863); Chodat, Monogr. Polygalac. 2: 353 (1893); F. M. Bailey, Queensland Fl.: 78 (1899); Adema in Blumea 14: 263 (1966) where further references and synonymy are given; Adema in Proc. Roy. Soc. Queensland 80: 126 (1969); J. H. Willis, Handb. Pl. Victoria 2: 342 (1973).

Polygala veronicaea F. Muell. in Trans. & Proc. Vict. Inst. 1: 117 (1855); Chodat in Engler & Prantl, Pflanzenfam. 3, 4: 336 (1896) '*veronicaefolia*'; Maiden & Betche, Census New South Wales Plants: 120 (1916); Domin, Biblioth. Bot. 22 (89⁴): 855 (1927); Burbidge & Gray, Fl. Austral. Cap. Territory: 244, t. 237 (1970); Beadle, Evans & Carolin, Fl. Sydney Region: 170 (1972); Beadle, Stud. Fl. NE. New South Wales 2: 154 (1973).

A prostrate or ascending perennial 10–20 cm in height with a woody rhizomatous stock. *Stems* terete and bearing antrorse curved or curled hairs. *Leaves* ovate to elliptical, usually broader near the base of the plant, variable in size on the one plant but usually 0.5–1.5 cm in length, the apex acute, the margins slightly

recurved, the venation conspicuously reticulate, the upper surface usually glabrous except for a few minute hairs near the margins, the lower surface with curved hairs on the midrib, the petiole short but distinct. *Flowers* mauve to purple, c. 5 mm long in few-flowered lateral racemes, the lower part of the peduncle being apparently fused to the stem. *Outer sepals* lanceolate, acute. *Wing-sepals* petal-like, obovate to broadly elliptical. *Keel* \pm equal to the somewhat oblong pubescent-based lateral petals and bearing 2 much-branched appendages. *Stamens* 8, almost sessile on the staminal tube. *Style* somewhat curved, narrow towards the apex and with 2 stigmas, one apical and one lateral. *Capsule* 4 x 5 mm, broadly obcordate, glabrous, the margin with a broad wing. *Seeds* c. 2 mm long, ovoid, with dense hairs, the caruncle small, with 3 lobes c. $\frac{1}{2}$ as long as the seed. *Fl.*: throughout the year but mostly Oct.–Dec.

DISTRIBUTION: China, Japan, Malasia, the Philippines, New Guinea and eastern Australia. On the Coast and Tablelands of New South Wales and extending as far south as northeastern Victoria. Usually in grassland.

NORTH COAST: Mountains on Cangai road, Upper Copmanhurst, *Rupp* NSW 116348, 7.1910; Purgatory Creek, 7 miles [11 km] NW. of Ramornie, *Blakely & Shirens* NSW 116347, 7.1922; Port Macquarie, *Betche* NSW 116352; near Gloucester, *Heron* NSW 116353, 10.1909. **CENTRAL COAST:** Hawkesbury Agricultural College, Richmond, —NSW 116356, 10.1906; Narellan, *McBarron* 14536, 10.1967; Camden, *McBarron* 11395, 11409, 10.1965; The Oaks, *McBarron* 13812, 2.1967. **SOUTH COAST:** Huskisson, *Rodway* NSW 116357, 10.1920; Con Creek, Bendethera Caves Reserve, *Whaite* 3242, 4.1969. **NORTHERN TABLELANDS:** NW. edge of the park, Gibraltar Range National Park, *Williams* 11.1967 (NE); Mt Lindsay, *Rupp* NSW 116350, 10.1912; Green Camp, Mt Kaputar National Park, *Coveny* 8756 & *Roy* 11.1976; University Grounds, Armidale, *Hayward* 11.1955 (NE); Guy Fawkes, *Boorman* NSW 116351, 12.1909; Tia R., *Maiden* NSW 116349, 11.1897; Gloucester Tops, *Coveny* NSW 116355, 1.1966. **SOUTHERN TABLELANDS:** McLachlan R., *Maiden* NSW 116358, 12.1896.

This species has been included in *P. sibirica* L. by F. Mueller, *Fragm.* 11: 4 (1878), *Syst. Census Austral. Pl.*: 8 (1882), *Key Vict. Pl.* 1: 134 (1887–1888), *Second Census*: 14 (1889), *Moore & Betche, Handb. Fl. New South Wales*: 35 (1893) and *Ewart, Fl. Victoria*: 715 (1931).

2. *P. linariifolia* Willd., *Sp. Pl.* 3: 877 (1803); Candolle, *Prodr.* 1: 326 (1824) '*linearifolia*'; Adema in *Blumca* 14: 274 (1966) where further references and synonymy are given; Adema in *Proc. Roy. Soc. Qld.* 80: 126 (1969).—*Polygala chinensis* L. var. *linariifolia* (Willd.) Chodat, *Monogr. Polygalac.* 2: 386 (1893) '*linearifolia*'.

An erect or prostrate or ascending annual or perennial herb with a woody stock in older plants. *Stems* terete and bearing antrorse curved or curled hairs and occasionally also long straight hairs. *Leaves* very variable in shape and size, obovate to narrowly oblanceolate or linear, 3–4.5 cm long and to 10 mm broad, the apex obtuse and mucronate, the margins flat or more frequently recurved, the lateral venation inconspicuous, the surfaces glabrous or with scattered hairs especially on the margins and midrib, the petiole short but distinct. *Flowers* purplish blue or yellow, 3–5 mm long in short to very long lateral racemes, the lower peduncle being apparently fused to the stem. *Outer sepals* ovate, acuminate and pubescent. *Wing-sepals* not petal-like, curved-obovate, mucronate, pubescent. *Keel* \pm equal to or longer than the broadly obovate lateral petals and bearing 2 rather small, divided and ultimately forked appendages. *Stamens* 8, the filaments free for c. $\frac{1}{3}$ of their length. *Style* curved, broad; towards the apex very broad, horseshoe-shaped and hooked with the stigma inside the hook. *Capsule* broadly oblong, the apex

symmetrically or slightly asymmetrically lobed, the margin with a narrow ciliate wing. *Seeds* 2–3 mm long, obovoid, black, with dense, long, white hairs, the caruncle large and the 3 short lobes usually much less than $\frac{1}{2}$ as long as the seed. Fl.: Sept.–Feb.

DISTRIBUTION: Southeastern Asia from China to the Philippines and New Guinea. Widespread in northern Australia but reaching New South Wales only on the Northwestern Slopes and the Far Western Plains. Usually in grassland.

NORTHWESTERN SLOPES: Warialda, *Rupp NSW 116338*, 9.1905, *NSW 116339*, 2.1907. **FAR WESTERN PLAINS:** 4 km W. of Weebah Gate, Qld-N.S.W. border, *Pickard 3282*, 11.1976.

The name *P. chinensis* L. was used for N.S.W. material by Moore & Betche, *Handb. Fl. New South Wales*: 35 (1893), and Maiden & Betche, *Census N.S.W. Plants*: 120 (1916). *P. chinensis* auctt. incl. *Adema* non L. is *P. arvensis* Willd., see Burt in *Notes Roy. Bot. Gard. Edinburgh* 32: 403 (1973). *Adema* in *Proc. Roy. Soc. Queensland* 80: 126 (1969) gives the characters distinguishing *P. linariifolia* from this species.

3. **P. virgata* Thunb., *Prod. Pl. Cap.* 2: 120 (1800); Candolle, *Prodr.* 1: 332 (1824); Harvey & Sonder, *Fl. Capensis* 1: 85 (1860) where further synonymy is given; Chodat, *Monogr. Polygalac.* 2: 403 (1893); Exell and Wild, *Flora Zambesiaca* 1: 318 (1960) where Exell gives further references and some discussion of varieties; Beadle, Evans & Carolin, *Fl. Sydney Region*: 170 (1972).

A virgate often almost leafless shrub to 3 m in height. *Stems* green with fine curled hairs or glabrous, often leafless and covered with the swollen nodes of deciduous leaves. *Leaves* minute to 9 cm long, 1–5(–20) mm broad, linear to narrowly elliptical, tapering at the base, glabrous, acute to emarginate, the margins usually recurved, the midrib distinct but the lateral veins inconspicuous. *Flowers* purple to pale lilac, c. 1 cm long on slender pedicels in long terminal racemes. *Outer sepals* broadly elliptical. *Wing-sepals* petal-like, from very broadly elliptical to suborbicular. *Keel* much longer than the spatulate lateral petals and bearing a crest of 2 much- and finely-branched appendages 4–5 mm long. *Stamens* 8, the filaments free for more than $\frac{1}{2}$ their length. *Style* strongly curved with hairs inside the curve, the stigma short and broad. *Capsule* 10 x 8 mm, obliquely obovate, glabrous, the margin with a wing c. 1 mm broad. *Seeds* 0.5–1.5 mm long, cylindrical and with a short pubescence, the large caruncle lacking lobes. Fl.: mostly July–Nov.

DISTRIBUTION: Naturalized on the North and Central Coast, from escaped garden plants. Native to Africa.

NORTH COAST: Tea Gardens, *Vickery NSW 116790*, 5.1976. **CENTRAL COAST:** Pymble, *Blakely NSW 116317*, 11.1913, *Dixon NSW 116318*, 8.1904; Middle Harbour, *Betche NSW 116319*, 8.1888; Boat Harbour, Botany, *Messmer NSW 116320*, 10.1944; Kurnell, *Boorman NSW 116321*, 7.1908, *Briggs NSW 116322*, 9.1969; near Oil Refinery, Kurnell, *Coveny 2129*, 9.1969; Kurnell Peninsula, $\frac{1}{2}$ mile [0.8 km] NW. of Potter Point, *Briggs NSW 116323*, 9.1965; 2 miles [3 km] S. of Kurnell, *Mair NSW 116324*, 8.1960; Cronulla, *Eames NSW 116325*, 11.1953; Razorback, Camden, *Ryder NSW 116326*, 4.1945; Heathcote, *Coveny 7735* & *Hind 7*.1976.

4. **P. myrtifolia* L., *Sp. Pl.* 703 (1753); Ker in *Bot. Reg.*: t. 669 (1823); Candolle, *Prodr.* 1: 322 (1824); Harvey & Sonder, *Fl. Capensis* 1: 83 (1860) where further synonymy is given; Chodat, *Monogr. Polygalac.* 2: 421 (1893); Ewart, *Fl. Victoria*: 715 (1931); J. M. Black, *Fl. South Australia* [ed. 2] 2: 503 (1948); Curtis,

Stud. Fl. Tasmania 1: 60 (1956); Beadle, Evans & Carolin, Fl. Sydney Region: 170 (1972); Beadle, Stud. Fl. NE. New South Wales 2: 154 (1973); J. H. Willis, Handb. Pl. Victoria 2: 342 (1973).

P. myrtifolia L. var *grandiflora* Hook. in Bot. Mag. n.s. 10: t. 3616 (1837).

[*P. grandiflora* Lodd., Bot. Cab.: t. 1227 (1827) nomen nudum non Walt. (1788).]

A large densely leaved shrub, occasionally tree-like. *Stems* with fine curled hairs or glabrous. *Leaves* (1-) 2-3 (-5) cm long, broadly elliptical, shortly petiolate, the blade somewhat tapering in the lower part, obtuse, glabrous at maturity, the margins flat, the venation inconspicuous. *Flowers* purple to pale lilac, 1-2 cm long, in short terminal racemes, the peduncles several mm long. *Outer sepals* broadly ovate to ovate-lanceolate. *Wing-sepals* petal-like, broadly obliquely ovate. *Keel* usually much longer than the very variable, usually very acuminate, lateral petals and bearing a crest of two much-branched appendages 4-6 mm long. *Stamens* 8, the filaments free for a little less than $\frac{1}{2}$ their length. *Style* curved, usually glabrous, the stigma short and broad. *Capsule* 10 x 8 mm, almost orbicular, glabrous, the margin with a wing c. 1 mm broad. *Seeds* c. 4 mm long, broadly ovoid to cylindrical, with scattered, short hairs, the caruncle large with conspicuous lobes. Fl.: throughout the year but mostly Sept.-Oct.

DISTRIBUTION: Naturalized on the southern part of the North Coast and on the Central Coast, probably originally from escaped garden plants but now abundant in some places. Native to Africa. Also naturalized in Victoria, South Australia and Western Australia.

NORTH COAST: Port Macquarie, *Breakwell* NSW 116337, 1.1914; Miners Beach, Port Macquarie, *Thompson* 1796, 5.1973; $\frac{1}{2}$ mile [0.8 km] S. of Port Macquarie, *Johnson* NSW 116328, 10.1953; Tahlce, Port Stephens, *Constable* NSW 45270, 10.1956; Tomaree, Port Stephens,—12.1954 (NE); Nelsons Bay, *Boorman* NSW 116329, 8.1911, *Lithgow* NSW 116330, 2.1962. **CENTRAL COAST:** Tascott, *Scott* 6.1958 (NE); Bayview-Mona Vale, *Cross* NSW 116331, 2.1935; Galston, *Morris* NSW 116332, 10.1927; Wahroonga, *Salasoo* 697, 7.1951; Beecroft-Red Hill, *Johnson* NSW 116333, 9.1946; Beecroft towards Red Hill, *Johnson* NSW 116334, 9.1950; Seaforth, *Constable* NSW 11441, 11.1949; Rose Bay, *Helms* NSW 116335, 4.1900; E. side of Government House, Sydney, *Camfield* NSW 97352, 7.1902; Ryde, *Jurd* 175, 9.1910; Sans Souci near Georges R, *Goode* 349, 9.1961; Kogarah, *Camfield* NSW 116336, 10.1900.

3. *MURALTIA DC.

Prodr. 1: 335 (1824); nom. conserv., Taxon 19: 816 (1970).

[After Johann von Muralt, Swiss Botanist].

Flowers small, sessile or shortly stalked, axillary, solitary or 2-together, subtended by a bract and 2 bracteoles. *Sepals* 5, unequal but subequal in many species, oblong, spatulate or lanceolate, obtuse to acute or even pungent, the 2 lateral sepals larger than the others. *Petals* 3, united at the base and adnate to the staminal tube, the lateral petals oblong, linear, ovate or spatulate, free or cohering by their edges, the lower petal hooded to form a keel and bearing 2 large petaloid appendages below the apex, rarely with 1 appendage. *Stamens* usually 7, monadelphous, the filaments united into a split tube which is usually inflated near the middle and attached to the petals, the anthers 1-locular and dehiscent by longitudinal slits. *Ovary* 2-locular, glabrous or pubescent, laterally compressed and usually with 4 horn-like appendages at the apex, the style curved near the apex, usually truncate and 2-lobed, the stigma usually lateral. *Ovules* 2, 1 in each loculus, anatropous and pendulous from the top of the central axis. *Fruit* a compressed,

often hispid, membranous capsule loculicidally dehiscent at the margins, usually with 4 horn-like appendages but occasionally without appendages. *Seeds* usually hispid with a cap-like caruncle at the base.

Shrubs or undershrubs. *Leaves* usually clustered in short axillary shoots, ovate, lanceolate or almost linear, often pungent-pointed, rarely scattered, often with the apex curved, glabrous or pubescent, the subtending leaf of the short shoot often differing somewhat from the rest.

An African genus of about 115 species with most species in South Africa. One species is naturalized to a limited extent in Australia.

* *M. heisteria* (L.) DC., Prodr. 1: 335 (1824); J. M. Black, Fl. South Australia [ed. 2] 2: 505 (1948); Levyns in Adamson & Saltcr, Fl. Cape Peninsula: 547 (1950); Levyns in J. S. African Bot., Suppl. 2: 212 (1954); Beadle, Evans & Carolin, Fl. Sydney Region: 171 (1972); J. H. Willis, Handb. Pl. Victoria 2: 344 (1973) where other references are cited.—*Polygala heisteria* L., Sp. Pl. 2: 704 (1753).

A stiff, erect or divaricate shrub, less rigid when growing in shade, usually 0.2–1 m in height, the stems stout, terete and densely pubescent and bearing contracted shoots which give the foliage a tufted appearance. *Leaves* clustered, those subtending the tuft c. 5–12 mm long, linear- or narrowly deltoid-subulate, keeled, somewhat recurved, rigidly pungent-pointed, often with hairs on the margin, broadest at the base, those of the axillary shoot similar but slightly narrowed at the base. *Flowers* 7–12 mm long, solitary or 2-together, sessile or almost so in the leaf-clusters. *Sepals* 5, almost equal in length, lanceolate, 5 mm long, persistent, the margins finely ciliolate. *Petals* 3, twice as long as the sepals, the lateral petals spathulate, obtuse, joined for c. $\frac{1}{2}$ their length, paler and longer than the clawed, usually purple, occasionally white, keel. *Stamens* 7, the anthers opening by longitudinal slits. *Style* widening near the apex and truncate, the stigma lateral and sessile. *Capsule* minutely pubescent, ovate, about as long as the sepals, with 4 long horn-like appendages at the summit. *Seeds* with minute fine hairs. Fl.: Aug.–Oct.

DISTRIBUTION: Naturalized in coastal eastern suburbs of Sydney. Native to South Africa. Also naturalized in Victoria and South Australia.

CENTRAL COAST: Bondi, *Boorman NSW 116449*, 9.1898; near Bronte, Waverley, *Burnell NSW 116448*, 9.1907; Bronte Beach,—*NSW 116450*, 1886; Bronte, *Boorman NSW 116447*, 10.1913; behind Bronte beach, *Coveny 7768*, 8.1976.

Levyns in J. S. African Bot., Suppl. 2: 212 (1954) gives further synonymy and a discussion with illustrations of the variability of the species.

90	Capparidaceae	141	Rhizophoraceae
91	Resedaceae	142	Myrtaceae
92	Droseraceae	143	Melastomataceae
93	Crassulaceae	144	Onagraceae
94	Escalloniaceae	145	Haloragaceae
95	Pittosporaceae	146	Araliaceae
96	Cunoniaceae	147	Umbelliferae
97	Davidsoniaceae	148	Alangiaceae
98	Rosaceae	149	Ericaceae
99	Mimosaceae	150	Epacridaceae
100	Caesalpiniaceae	151	Myrsinaceae
101	<i>Papilionaceae, Part I</i>	152	Primulaceae
102	<i>Geraniaceae</i>	153	Plumbaginaceae
103	Oxalidaceae	154	Sapotaceae
104	Linaceae	155	Ebenaceae
105	Erythroxylaceae	156	Symplocaceae
106	Zygophyllaceae	157	Oleaceae
107	Rutaceae	158	Loganiaceae
108	Simaroubaceae	159	Gentianaceae
109	Burseraceae	160	Menyanthaceae
110	Meliaceae	161	Apocynaceae
111	<i>Tremandraceae</i>	162	Asclepiadaceae
112	<i>Polygalaceae</i>	163	Convolvulaceae
113	Euphorbiaceae	164	Polemoniaceae
114	Callitrichaceae	165	Hydrophyllaceae
115	Anacardiaceae	166	Boraginaceae
116	Aquifoliaceae	167	Verbenaceae
117	Celastraceae	168	Avicenniaceae
118	Siphonodontaceae	169	Labiatae
119	Hippocrateaceae	170	Solanaceae
120	Stackhousiaceae	171	Scrophulariaceae
121	Icacinaceae	172	Selaginaceae
122	Sapindaceae	173	Bignoniaceae
123	Akaniaceae	174	Pedaliaceae
124	Rhamnaceae	175	Martyniaceae
125	Vitaceae	176	Orobanchaceae
126	Elaeocarpaceae	177	Gesneriaceae
127	Tiliaceae	178	Lentibulariaceae
128	Malvaceae	179	Acanthaceae
129	Sterculiaceae	180	Myoporaceae
130	Dilleniaceae	181	<i>Plantaginaceae</i>
131	Eucryphiaceae	182	Rubiaceae
132	Hypericaceae	183	Caprifoliaceae
133	Elatinaceae	184	Dipsacaceae
134	Frankeniaceae	185	Cucurbitaceae
135	Violaceae	186	Campanulaceae
136	<i>Flacourtiaceae, with Supplement</i>	187	Lobeliaceae
137	Passifloraceae	188	Goodeniaceae
138	Cactaceae	189	Brunoniaceae
139	Thymelaeaceae	190	Stylidiaceae
140	Lythraceae	191	Compositae

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192	Lycopodiaceae	206	Adiantaceae
193	Selaginellaceae	207	Vittariaceae
194	Isoetaceae	208	<i>Davalliaceae</i>
195	Psilotaceae	209	<i>Grammitidaceae</i>
196	Ophioglossaceae	210	<i>Polypodiaceae</i>
197	Marattiaceae	211	<i>Aspidiaceae</i>
198	Osmundaceae	212	Athyriaceae
199	Schizaeaceae	213	Thelypteridaceae
200	Gleicheniaceae	214	Aspleniaceae
201	<i>Hymenophyllaceae</i>	215	Blechnaceae
202	Cyatheaceae	216	Marsileaceae
203	Dennstaedtiaceae	217	Azollaceae
204	Lindsaeaceae	218	Salvinaceae
205	Pteridaceae		

